

**REMARKS**

The present amendment under 37 CFR 1.111 is being submitted in conjunction with a Request for Continued Examination of the above-referenced application under 37 CFR 1.114, to permit entry of: (i) the claim amendments set forth above; (ii) a Declaration under 37 CFR 1.132; and (iii) a Supplemental Information Disclosure Statement under 37 CFR 1.97. A Notice of Appeal was entered on January 9, 2006. Applicant further petitions for an extension of two months from the date on which an Appeal Brief was due (i.e., March 9, 2006) and submits herewith the fee required under 37 CFR 1.17(a)(2). In view of the extension of time thus requested, it is submitted that the present amendment is timely filed and that the claim amendment, the Rule 132 Declaration, and the Supplemental Information Disclosure Statement are properly to be considered.

As indicated in the Advisory Action dated October 20, 2005, the claim amendments proposed in applicant's response under 37 CFR 1.116 dated October 10, 2005 were not entered, it being alleged that new issues requiring further search were raised. Accordingly, the claim amendments and the markings to show changes made are set forth hereinabove based on the version of the claims as presented in applicant's response under 37 CFR 1.111 entered June 3, 2005.

In order to emphasize the patentable distinctions of applicants' invention over the art of record, claims 1, 22, 27, 29, and 32 have been amended to call for the fibrous mat used as

the first facer to comprise a non-woven, glass fiber web wherein the fibers consist essentially of chopped glass fibers having an average fiber diameter ranging from about 9.5 to 12.5  $\mu\text{m}$  and an average fiber length ranging from about 6 to 12 mm. The feature thus added to claims 1, 22, 27, 29, and 32 was formerly recited by claim 7, which depended from claim 1. Claim 7 has been cancelled to expedite prosecution.

Support for the amendment of claims 1, 22, 27, 29, and 32 is found in the specification, e.g. at page 8, line 29; page 10, line 32; and page 13, lines 9-11. Consequently, no new matter has been added.

Claim 28 stands withdrawn as being directed to a non-elected invention and claim 16 was previously cancelled. Accordingly, amended claims 1-6, 8-15, 17-27, and 29-32 remain pending.

Applicant' invention, as recited by claims 1-6, 8-15, 17-27, and 29-32, as amended, is directed to a nonwoven, fibrous mat comprising chopped glass fibers having a relatively small range of average fiber diameters, and a gypsum board faced with such a mat. In various embodiments, the gypsum board exhibits a combination of desirable structural and functional features that render it fire resistant and easily painted or otherwise given an aesthetically pleasing finish after installation with a minimum of surface preparation required. The mat has a high permeability, permitting easy extraction of excess water ordinarily present during slurry-based manufacture of gypsum or other hydraulic set board. Surprisingly and unexpectedly, gypsum board faced in accordance with the invention with the present nonwoven glass fiber mat, wherein the fibers consist essentially of chopped glass

fibers having an average fiber diameter ranging from about 9.5 to 12.5  $\mu\text{m}$  and an average fiber length ranging from about 6 to 12 mm, has a smoother surface than boards made with mats employing either larger or smaller diameter fibers. It is especially surprising and significant that the aforementioned 9.5 to 12.5  $\mu\text{m}$  fibers result in smoother board than that obtained with fibers having a smaller diameter. It is likewise surprising and unexpected that a gypsum board having a facer wherein the average glass fiber diameter is 9.5 – 12.5  $\mu\text{m}$  and the average fiber length is 6 – 12 mm is smoother than board faced with mat having the same diameter but fiber length of 19 mm (3/4").

The Examiner has indicated that in accordance with MPEP 2111.03, the term "composed of" used in the recitation of the glass mat in claims 1, 22, 27, 29, and 32 can be interpreted as meaning either "consisting of" or "consisting essentially of," depending on the facts of the particular case. In the present instance, it is submitted that the specification, when read as a whole by a person of ordinary skill in the art, and as inferred by the Examiner, would clearly indicate that the latter meaning is intended. For example, applicant respectfully points to: (i) the recitation of the Field of the Invention at page 1, lines 8-9, of a glass fiber mat employing fibers having "a narrow range of diameters" used in producing gypsum board; (ii) the narrow range of diameters of fibers in preferred mats delineated at page 7, lines 17-20; and (iii) the benefits of a narrow range of diameters set forth at page 7, lines 27-32.

Nevertheless, claims 1, 22, 27, 29, and 32 have been amended, for the sake of clarity, to recite a non-woven, glass fiber mat in which the glass fibers consist essentially of chopped glass fibers having an average diameter ranging from about 9.5 to 12.5  $\mu\text{m}$ .

Claim 16 was rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. In view of the cancellation of claim 16, it is submitted that the rejection thereof is now moot.

Accordingly, reconsideration of the rejection of claim 16 under 35 U.S.C. §112, second paragraph, as being indefinite, is respectfully requested.

Claims 1-3, 7-15, 17-18, 21-24, 27, 29, and 32 stand rejected under 35 USC 102(b) as being anticipated by US Patent 5,772,846 to Jaffee. The details of the rejection were said to be found in paragraph 10 of the Office Action dated December 27, 2004 [*sic* – 2004 was apparently intended]. Inasmuch as claim 7 is cancelled in the present amendment, this rejection will be discussed with reference to remaining claims 1-3, 8-15, 17-18, 21-24, 27, 29, and 32, as amended

Jaffee provides a thermoformable nonwoven fibrous mat having properties said to make it particularly suited for a facer on insulating gypsum board.

Applicant respectfully submits that the gypsum board delineated by amended claims 1-3, 8-15, 17-18, 21-24, and 27; the fibrous mat recited by amended claim 29; and the

hydraulic set board of amended claim 32 are not disclosed by Jaffee. While Jaffee admittedly discloses, in general terms, a nonwoven fibrous mat for use as a facer on gypsum insulating board, applicant maintains that Jaffee fails to disclose or suggest the particular mat recited by applicant, let alone a gypsum board faced with mat delineated by the foregoing claims, as amended.

With respect to claims 1, 19-22, 27, and 32, and referencing col. 2, lines 1-15, the Examiner has pointed to Jaffee as teaching a nonwoven fibrous mat for use as a facer on gypsum insulating board. The Examiner has equated the latex binder of Jaffee (col. 2, lines 35-45) with applicant's resinous binder. In addition, the Examiner has indicated that col. 3, lines 35-40 of Jaffee teaches glass fibers having an average fiber diameter from about 9 to 20 microns.

By way of contrast, applicant's claims 1, 27, and 32 (and claims 20-22 dependent on claim 1) recite a nonwoven fibrous mat comprising a web of chopped glass fibers. The fibers of the web consist essentially of glass fibers having an average fiber diameter ranging from about 9.5 to 12.5  $\mu\text{m}$  and an average fiber length ranging from about 6-12 mm. Significantly, the Examiner has not pointed to any disclosure or suggestion of such ranges. In addition to the 9-20 micron fibers identified by the Examiner at col. 3, line 39, Jaffee is submitted to disclose preferred fibers having fiber diameters of 10-16 microns (col. 3, line 40); 16 microns (col. 3, line 42, col. 5, line 1, and claim 13); 13 microns (col. 6, line 67); and 15 microns (col. 3, line 8). Jaffee further teaches the preferability of mat comprised of a fiber blend including both glass fibers of the aforementioned diameters and organic

microfibers. Clearly, none of these chopped glass fiber diameter species disclosed by Jaffee falls within the 9.5 to 12.5  $\mu\text{m}$  range recited by claims 1, 27, and 32. Neither does any mat species disclosed or suggested by Jaffee incorporate fibers having an average fiber diameter falling within applicant's range of about 9.5 to 12.5  $\mu\text{m}$ . Even less is there any disclosure or suggestion of gypsum or hydraulic set board comprising mat having a web of fibers of such diameter.

Applicant respectfully maintains that Jaffee falls far short of the specificity of disclosure that would be required to properly ground a *prima facie* anticipation of amended claims 1-3, 8-15, 21-24, 27, 29, and 32. Absent disclosure that every feature recited by a claim is disclosed by a single reference, either explicitly or implicitly, such a rejection is impermissible, as the Federal Circuit has repeatedly held. See, e.g., in the context of chemical arts, *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 51 USPQ2d 1943 (Fed. Cir. 1999). [“To anticipate a patent claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently...When a patent claims a chemical composition in terms of ranges of elements, any single prior art reference that falls within each of the ranges anticipates the claim; a single prior art species within the patent's claimed genus reads on the generic claim and anticipates. *Id.* at 1346.]

It is established law that a reference that describes subject matter delineated by a numerical range of composition does not *per se* anticipate a claim delineating a different range merely because of the overlap of such ranges. In the present instance, claims 1-3, 8-15, 21-24, 27, 29, and 32 clearly recite such ranges. More specifically, amended claims 1,

27, 29, and 32 (and claims 2-3, 8-15, 17-19, and 21-24 dependent on claim 1) delineate a web composed of chopped glass fibers having an average fiber diameter ranging from about 9.5 to 12.5 µm. Amended claims 8, 11, 12, 17-19, and 22 recite additional features of preferred embodiments delineated by way of other numerical ranges. While the existence of a prior art species falling within a claimed generic range has been held to anticipate the claimed genus, in the present instance no species of Jaffee has been identified that falls within the claimed ranges. Absent such an identified species, a case-specific factual analysis is legally required to establish possible anticipation. *Ex parte Cole*, 2001 WL 1918535 (BPAI, 2001), quoting *Ex parte Lee*, 31 USPQ2d 1105, 1107 (BPAI, 1993). Explaining the nature of the factual analysis, the Board of Patent Appeals and Interferences required a determination of the specificity of disclosure. [“Where, as here, a reference describes a class of compositions, the reference must be analyzed to determine whether it describes a composition(s) with sufficient specificity to constitute an anticipation under the statute. *Ex parte Lee*, supra, at 1106-1107, emphasis added, citing *In re Schaumann*, 572 F.2d 312, 197 USPQ 5 (CCPA 1978).]

The Federal Circuit has applied similar reasoning in regard to the question of process parameter limitations, holding that a prior art disclosure of a process temperature range of 100-500°C did not anticipate a claim limitation of 330 to 450°C. [“Given the considerable difference between the claimed range and the range in the prior art, no reasonable fact finder could conclude that the prior art describes the claimed range with sufficient specificity to anticipate this limitation of the claim.” *Atofina v. Great Lakes Chemical Corp.*, 441 F.3d

991, 2006 U.S. App. LEXIS 7180, slip op. at 22 (Fed. Cir. 2006)]. Applicant respectfully submits that the law established by the *Atofina* court is apposite the facts of the present instance. That is to say, the *Atofina* court's holding that mere disclosure of a temperature range overlapping a claimed temperature range is not anticipatory is also applicable to applicant's claimed diameter range, which at best falls within a much wider disclosed diameter range.

Furthermore, it is respectfully submitted that the Examiner's own statement [“...although Jaffee does not teach with certain specificity of Applicant's desired range, it should be noted that Jaffee's range does overlap with Applicant's range” (Office Action dated August 15, 2005, at page 5, lines 5-6, emphasis added) and reiterated in the Advisory Action of October 20, 2005] clearly admits that the specificity required under *Lee* and *Atofina* to predicate anticipation is missing, rendering the present rejection of claims 1-3, 7-15, 17-18, 21-24, 27, 29, and 32 under 35 USC 102(b) untenable.

Accordingly, it is submitted that claims 1, 27, and 32 (as well as claims 2-3, 8-15, 17-18, and 21-24 dependent thereon), are not properly subject to an anticipation rejection.

The Examiner's reliance on *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971) in making the foregoing anticipation rejection is submitted to be misplaced. In *Susi*, the court addressed an obviousness rejection under 35 USC 103, not an anticipation rejection under 35 USC 102. Applicant submits that the Examiner has further confounded the distinction between anticipation and obviousness rejections by suggesting the submission of an affidavit to establish unexpected results, while maintaining a rejection under 35 USC 102(b). See the

August 15, 2005 rejection at page 5, lines 9-14. Contrary to the Examiner's apparent understanding, applicant has not argued the novelty of the present claims by asserting that Jaffee's disclosed examples and preferred embodiments teach away from a broader disclosure or non-preferred embodiments. Rather, in response to an anticipation rejection under 35 USC 102(b), applicant has pointed to particular disclosures in Jaffee to establish that: (i) no disclosed species fall within applicant's claimed ranges; and (ii) no disclosure of applicant's particular ranges is provided. Inasmuch as the Examiner has further implied that certain claims might be obvious over Jaffee, applicant has provided additional remarks to establish that there is not even a suggestion in Jaffee of the present subject matter, including applicant's particular claimed ranges.

Applicant continues to maintain that the surprising and unexpected results delineated by the instant specification rebut any purported conclusion that Jaffee provides the requisite level of specificity of disclosure or that the subject matter delineated by amended claims 1-3, 8-15, 21-24, 27, 29, and 32 is obvious over Jaffee. [“If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with ‘sufficient specificity’ to constitute an anticipation of the claims. The unexpected results may also render the claims unobvious.” MPEP 2131.03 (II).]

Significantly, Jaffee contains no disclosure or suggestion concerning any of the beneficial properties afforded by the board and mat of the present invention. As set forth by

the specification, preferred embodiments of applicant's gypsum board provide, *inter alia*, flame resistance (page 10, lines 19-22) and high permeability of the mat that permits easy extraction of excess water present in the gypsum slurry during board fabrication (page 11, lines 19-34). Of particular significance is the desirable "hand" of the present mat and board, which permits easy application of surface finishes (such as paint) to installed board without extensive surface preparation (page 8, lines 5-14 and page 7, lines 11-14). Such benefits are surprisingly absent from boards made from fibers having diameters falling within other narrow ranges that are outside those required by applicant's claims.

Further with respect to the question of possible obviousness, applicant directs attention to the following statement in the specification at page 7, lines 27-32:

However, it is surprising and unexpected that gypsum board produced using mat formed with fibers having a diameter within a narrow range centered at about 11  $\mu\text{m}$  is considerably smoother than board faced with mats wherein the fibers have a narrow range of diameters centered about 16, 15, 13, 8, and 5  $\mu\text{m}$ , and smoother than other fiber-faced gypsum boards known in the art.

Applicant respectfully submits that such a statement provides a direct comparison of the smoothness of gypsum board faced with a non-woven glass fiber mat in accordance with the present invention and board faced with non-woven glass fiber mats having average diameter outside the claimed diameter range, substantiating the surprising and unexpected smoothness afforded by the present gypsum board.

By way of contrast, Jaffee fails to recognize any of these benefits, which are clearly entirely unexpected and surprising. It is respectfully submitted that the presence of these

advantageous benefits, which would not otherwise be obtained, provides ample basis for predicating patentability of amended claims 1-3, 8-15, 21-24, 27, 29, and 32 over Jaffee, under the standard of *In re Geisler*, 116 F.3d at 1465, 1470, 43 USPQ2d at 1362, 1365 (Fed. Cir. 1997). [“The court in *Soni* summed up the rule of that case as follows: ‘[W]hen an applicant demonstrates *substantially* improved results, as *Soni* did here, and *states* that the results were *unexpected*, this should suffice to establish unexpected results *in the absence of* evidence to the contrary.’ citing *In re Soni*, 34 USPQ 2d 1684, 1688 (Fed. Cir. 1995). Emphases in the original.]

Applicant additionally draws attention to the data set forth as Comparative Example 1 and Examples 2-5. It is respectfully submitted that these data clearly establish that the properties of the present mat and board are surprising and unexpected over the prior art of record. In particular, the Examiner’s attention is respectfully drawn to Example 5, beginning on page 16 of the specification. The properties of gypsum boards constructed with the non-woven fibrous mats prepared in Examples 2-4 are compared with gypsum board constructed with the prior art mat of Comparative Example 1, which employs fibers having an average diameter of 13  $\mu\text{m}$ , a value clearly within the range delineated by Jaffee. As set forth at page 17, lines 7-15, the Example 2-4 boards have a smoothness rating of 8, whereas the Comparative Example 1 board has a smoothness of only 4. It is submitted that these data clearly demonstrate the unexpected and surprising smoothness of gypsum board prepared using mat facers having the particular fibers required by applicant’s claims. Absent any

evidence to the contrary adduced by the Examiner, applicant maintains that the requirements of *Soni and Geisler, supra*, are satisfied, obviating any need for further evidence.

Nevertheless, in order to expedite prosecution, submitted herewith is a declaration under 37 CFR 1.132 by Alan M. Jaffee, the inventor of the present subject matter. The Declaration provides a quantitative test by which the surface smoothness of gypsum boards can be characterized objectively, in particular using image processing software to analyze the appearance of the board surface when illuminated by ordinary light at grazing incidence. In particular, it is submitted that the data set forth in the Declaration establish that gypsum board faced with non-woven glass fiber mat having an average diameter of 11  $\mu\text{m}$  (clearly within applicant's 9.5 – 12.5  $\mu\text{m}$  range) is demonstrably smoother than board faced with 8 and 13  $\mu\text{m}$  fiber mats (just outside the claimed limits). The Declaration data further compare gypsum board faced with mat wherein the glass fibers have an average diameter of 11  $\mu\text{m}$  and an average fiber length of 12 mm with board faced with a mat having glass fibers of a similar diameter but average fiber length of 19 mm (3/4"). Such a mat is sold commercially by the assignee of the present application under the trade name Dura-Glass® 7529 glass fiber mat. The comparison also establishes the superior smoothness of the board delineated, e.g., by claim 1.

The Declaration is further submitted to establish that the enhanced smoothness of the 11  $\mu\text{m}$  faced board is surprising and unexpected for a person having ordinary skill in the art, who would have expected, to the contrary, that the board made with mat having the smallest fibers, i.e. the 8  $\mu\text{m}$  average fibers, would have been smoother than board made with 11 and

13  $\mu\text{m}$  mat. Also established is that a person having ordinary skill in the art would not be motivated to use shorter fibers (e.g., fibers having an average length ranging from about 6 to 12 mm) instead of fibers 19 mm (3/4") or longer because of concern about required tensile and tear strengths associated with facing gypsum board.

With respect to claims 2 and 3, the Examiner has pointed to col. 3, lines 34-40 of Jaffee as teaching that E-type, C-type, T-type, and sodium borosilicate glass fibers are preferred. However, these compositions are disclosed as having an average diameter ranging from about 9 to 20 microns. Accordingly, it is submitted that the compositions disclosed at col. 3, lines 34-40 of Jaffee do not anticipate or render obvious claim 1, from which claims 2 and 3 depend. As to claim 7, certain disclosures of fiber length at col. 3, lines 55-60 have been cited. The Examiner has indicated that col. 3, lines 54-56 of Jaffee teaches fibers all having the same length; that this disclosure anticipates the recitation in claim 8 of fibers having a fiber length ranging from about 6 to 18 mm. It is respectfully submitted that such disclosures do not overcome Jaffee's lack of disclosure concerning the about 9.5 to 12.5  $\mu\text{m}$  fiber diameter range, which is required by each of dependent claims 2-3 and 8. For the reasons set forth hereinabove it is submitted that claims 2-3 and 8 patentably define over Jaffee.

As to claims 9-10, Jaffee's teaching of a latex binder comprising a crosslinkable vinyl chloride acrylate copolymer latex (col. 3, lines 60-67) is cited, along with disclosure of an aqueous stearylated melamine emulsion said to act as an external crosslinker (col. 4, lines 14-30). In reference to claims 11-12, an amount of crosslinker in the amount of up to 10

weight percent is said to be taught at col. 4, lines 30-38. Col. 4, lines 15-20 is cited concerning claim 13 as providing the claimed melamine formaldehyde containing resinous binder. As to claim 14, the Examiner has cited Jaffee's disclosure of a glass transition temperature of up to 113°F, which is compared to applicant's recited range of about 15 to 45°C emulsion. Applicant respectfully observes that 15-45°C converts to 59-113°F, rather than the 15-133°F suggested by the Examiner. The purported water repellency effect of stearylated melamine at col. 4, lines 20-25 is cited with respect to claim 15. Jaffee's disclosure at col. 3, lines 18-25 of basis weights of 1.8 to 2.2 pounds per 100 square feet with regard to claims 17 and 18. As to claims 23 and 24, the Examiner has pointed to Jaffee's disclosure that it is known to face a gypsum wall board with a fiber glass non woven mat and the incorporation by reference into Jaffee of US Patent 4,647,496.

However, applicant maintains that none of these disclosures overcomes the lack of disclosure of the 9.5 to 12.5  $\mu\text{m}$  range of average fiber diameters recited by claim 1, from which claims 2-3, 8-15, 17-19, and 21-24 depend.

In view of the foregoing remarks, it is submitted that a *prima facie* case of anticipation of amended claims 1-3, 7-15, 17-19, and 21-24 has not been established.

As to claim 29, the Examiner has pointed to Jaffee's disclosure of a nonwoven fibrous mat for use as a facer on a gypsum board (col. 2, lines 1-15), the mat comprising a major portion of textile glass fibers and a minor portion of polymer fibers (col. 2, lines 50-60). The Jaffee mat is said to be bound together with a latex (col. 2, lines 35-45). Glass fibers

having a length between 0.25 and 1 inch are said to be used (col. 3, lines 55-60), as are fibers with an average diameter ranging from about 9 to 20 microns (col. 3, lines 35-40).

It is respectfully submitted that the same considerations demonstrating lack of a *prima facie* case for anticipation of claim 1 over Jaffee are applicable as well to claim 29. In particular, it is submitted that Jaffee does not disclose (i) the particular fiber diameter range of about 9.5 to 12.5  $\mu\text{m}$  recited by both claims 1 and 29, or (ii) any species falling within that range. As a result, any gypsum board constructed in accordance with the teaching of Jaffee would lack the surprisingly unexpected and highly desirable properties including, *inter alia* a smooth, easily finished surface, exhibited by the mat-faced gypsum board defined by claim 29. Accordingly, it is submitted that claim 29 patentably defines over Jaffee.

With respect to claim 32, the Examiner has stated that claim 32 remains rejected as set forth in detail in paragraph 6 of the December 27, 2004 Office Action. In particular, the previous Office Action stated that the limitation of “hydraulic set” had not been given any patentable weight because the method of making the gypsum board is not germane to the issue of patentability of the product itself. No other remarks are set forth in paragraph 6 of the present Office concerning the way in which Jaffee was particularly applied to reject claim 32, which is an independent claim.

However, in paragraph 11 of the present Office Action dated August 15, 2005, the Examiner has acknowledged applicant’s argument that the limitation of “hydraulic set” should be given full patentable weight. Accordingly, it is submitted that the basis on which

claim 32 stands rejected, namely the lack of patentable weight given to the “hydraulic set” limitation in the August 15 Office Action, is no longer apposite. Thus, it is respectfully submitted that the rejection of claim 32 as it stands is improper and incomplete, there being no positive recitation of the manner in which Jaffee is applied to claim 32, as is required by MPEP 706.02(j), sections (A) – (D), and 37 CFR 1.104 (c)(2).

Even so, applicant maintains that Jaffee fails to disclose or suggest the average fiber diameter range of about 9.5 to 12.5  $\mu\text{m}$  delineated by claims 1 and 29. For at least the same reasons as set forth hereinabove concerning claims 1 and 29, applicant respectfully submits that claim 32 patentably differentiates Jaffee.

In view of the amendment of claims 1, 22, 27, 29, and 32, the cancellation of claim 7, and the foregoing remarks, it is submitted that claims 1-3, 8-15, 17-19, 21-24, 27, 29, and 32, as amended, are novel over Jaffee.

Accordingly, reconsideration of the rejection of claims 1-3, 7-15, 17-18, 21-24, 27, 29, and 32 under 35 USC 102(b) as being anticipated by Jaffee is respectfully requested.

Claims 1, 16, and 25 were rejected under 35 USC 102(b) as being anticipated by US Patent 5,308,692 to Kennedy et al., which discloses fiber mats for use as a fire resistant underlayment or facing for materials used in the building and construction industries. The mat comprises a blend of mineral fibers and glass fibers wherein the mineral fibers comprise between 50 and 95 weight percent of the blend of fibers. Col. 2, lines 65-69.

In view of the cancellation of claim 16, this rejection will be discussed with respect to remaining claims 1 and 25.

It is said that the details of the rejection of claims 1, 16, and 25 are set forth in paragraph 13 of the Office Action dated December 27, 2004. As to claim 1, the Examiner pointed in that action to disclosure at col. 3, lines 64-69 of a fire resistant mat comprising a blended web of mineral wool fibers and monofilament glass fibers wherein the fibers are bonded by a heat settable fire resistant binder. Glass fibers suitable for the Kennedy et al. mat are said to have a diameter between 10 and 20 microns and a length of about 1.2-4.4 cm (col. 4, lines 43-50).

Applicant respectfully submits that nowhere in the Kennedy et al. reference is there any disclosure or suggestion of non-woven glass fiber mat comprising a web of glass fibers that consist essentially of chopped glass fibers having an average fiber diameter ranging from about 9.5 to 12.5  $\mu\text{m}$ . Instead, the glass fibers are said to have diameters between 10 and 20 microns, as noted by the Examiner, and as recited also by claim 4 of Kennedy et al. Fibers of 15 micron diameter are said to be preferable (col. 4, line 48). Applicant, on the other hand, has found that a board faced with mat containing fibers of this diameter are substantially less smooth than those of the present board, as taught at page 7, lines 27-33. Moreover, the mat of Kennedy et al. comprises a blend of fibers including both the aforementioned 10-20 micron glass fibers and other fibers such as mineral wool. For example, claim 1 of Kennedy et al. requires the blend to comprise a preponderance (i.e. 50-95%) of mineral fibers, which are not present in any substantial amount in the present mat.

The Examiner has not pointed to any disclosure or suggestion in Kennedy et al. of embodiments that eliminate a required blend of fibers, or motivation for a person having ordinary skill in the relevant art to make such a profound modification. Applicant, on the other hand, employs a single type and size of fibers. It is submitted that the manufacture of the Kennedy et al. mat is inherently more complicated, requiring additional process steps to assure that fibers of the disparate diameters and types required are uniformly blended. Significantly, the diameter of the glass fibers used in the mat species provided by Kennedy et al. is not expressly disclosed. Applicant submits that one of ordinary skill would regard this lack of disclosure as teaching that fibers encompassing the aforementioned 10-20 micron range would have been used, and that the Kennedy et al. patentees did not regard any particular value within that range as being at all critical.

Applicant respectfully submits that the law cited hereinabove in connection with the rejection of claims 1-3, 7-15, 17-18, 21-24, 27, 29, and 32 over Jaffee is equally pertinent to the rejection of claims 1, 16, and 25 over Kennedy et al. More specifically, Kennedy et al. discloses no species wherein the glass fibers used have a diameter falling within the range delineated by amended claim 1 and inherited by claim 25, which depends on claim 1. As a result, Kennedy et al. must also be evaluated under the standard of *Lee* and *Atofina* to determine if the level of specificity of disclosure is sufficient to sustain an anticipation rejection. It is respectfully submitted that the present rejection lacks the required analysis and that the required specific disclosure is not provided by Kennedy et al. Significantly, the Examiner herself has acknowledged the lack of specificity with respect to Kennedy et al. as

well: "...although Kennedy does not teach with certain specificity of Applicant's desired range, it should be noted that Jaffee's [sic – Kennedy was obviously intended] range does overlap with Applicant's range. (See page 6, lines 12-14 of the instant Office Action.) Therefore, applicant maintains the rejection of claims 1, 16, and 25 under 35 USC 102(b) over Kennedy et al. is not proper.

Having not disclosed any species falling within the limits required by claims 1 and 25, and having termed 15 micron fibers preferable, the Kennedy et al. patentees clearly cannot be regarded as having taught any mat comprising fibers with average fiber diameters in applicant's claimed range of 9.5 to 12.5  $\mu\text{m}$  as having been used or preferred. Moreover, all the mat species disclosed by Kennedy et al. employ a blend of fibers; and not fibers having a relatively restricted range of diameters as delineated by claims 1 and 16, and 25 dependent thereon. Reference is drawn particularly to Table 1, wherein the six samples all comprise a blend of 80-90% mineral wool and only 10-20% glass fiber.

As set forth hereinabove in connection with the 102(b) rejection over Jaffee, the restricted range of fiber diameters employed in the present mat and gypsum board results in a board having a surface that is surprisingly and unexpectedly smooth. Surface finishing, such as painting and the like, is accomplished far more easily and expeditiously. Spackling or related treatments comprising application of a filler substance to level out surface asperities, conventionally required to achieve a satisfactory finish using prior art glass fiber mat faced gypsum boards, are not required in most cases for the board recited by applicant's claims.

Applicant again points to Comparative Example 1 and Examples 2-5 and the data in applicant's Rule 132 declaration as establishing the novelty and nonobviousness of claims 1, 16, and 25, as set forth hereinabove in connection with the novelty rejection of claims 1-3, 7-15, 17-18, 21-24, 27, 29, and 32 over Jaffee. It is particularly submitted that Example 5 establishes the unexpected and surprising smoothness of gypsum boards constructed in accordance with the invention, thereby rendering amended claims 1 and 25 patentably novel and unobvious over Kennedy et al. as well.

For these reasons, and those further set forth above, it is submitted that Kennedy et al. does not disclose or suggest a gypsum board having the outstanding combination of structural and functional properties afforded by the gypsum board recited in present claims 1 and 25.

Accordingly, reconsideration of the rejection of claims 1, 16, and 25 under 35 U.S.C. 102(b) as being anticipated by Kennedy et al. is respectfully requested.

Claims 26 and 31 were rejected under 35 USC 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Jaffee.

As set forth hereinabove in connection with the 102(b) rejection of claims 1-3, 7-15, 17-18, 21-24, 27, 29, and 32 over Jaffee, it is submitted that Jaffee fails to disclose or suggest any gypsum board faced with a mat comprising a web wherein the glass fibers consist essentially of fibers having an average diameter ranging from about 9.5 to 12.5  $\mu\text{m}$ , as required by claim 1, from which claim 26 depends, or by claim 29, from which claim 31

depends. If for no other reason, claims 26 and 31 are patentable over Jaffee for the same reasons as claim 1, from which they depend.

But even less is there any disclosure or suggestion of a gypsum board that would exhibit flame resistance sufficient to pass the test of ASTM Method E84, Class 1, as recited by claim 26, or a fibrous mat as recited by claim 31 that would have a permeability of at least about 250 cfm/ft<sup>2</sup>, as measured in accordance with ASTM Standard D237. While the Examiner has admitted that there is no explicit disclosure or suggestion in Jaffee of such flame resistance or permeability, she has asserted that such properties may be presumed to be inherent and that the burden is upon applicant to prove otherwise under *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (C.C.P.A. 1980) and *In re Best*, 562 F.2d 1252, 195 USPQ 430 (C.C.P.A. 1977).

Applicant respectfully submits that the Examiner's reliance on *Fitzgerald* and *Best* is misplaced, inasmuch as the factual situation required for those cases to be apposite is not satisfied in the present instance. The Examiner further points to footnote 4 of the *Best* decision for the proposition that a rejection may be made alternatively for obviousness under 35 USC 103 or anticipation by inherency under 35 USC 102. However, the *Best* holding, which was affirmed by *Fitzgerald, supra*, was predicated on the substantial identicity of the claimed and prior art products. [“Where, as here, the claimed and prior art products are identical or substantially identical... the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product.” *Best, supra*, at 1255, emphasis added.]. In the present instance, therefore, the

gypsum board of claim 26 and the fibrous mat of claim 31 must be substantially identical to the gypsum board and fibrous mat allegedly provided by the Jaffee disclosure for *Fitzgerald* and *Best* to be applicable.

Applicant respectfully traverses any such identification. The Examiner has admitted that Jaffee does not disclose or suggest flame resistance, but instead relies on the presumed inherency of such a feature in the Jaffee gypsum board. As set forth hereinabove in connection with the 102(b) rejection of claim 1 over Jaffee, gypsum board employing mat comprising chopped glass fibers of the particular diameter range applicant requires is not disclosed or suggested by Jaffee. To the contrary, the preferred diameter ranges and the disclosed species all employ larger diameter fibers. As a result, it is submitted that there are substantial differences between any gypsum board disclosed or suggested by Jaffee and the board recited by claim 1, on which claim 26 depends, precluding application of *Fitzgerald* or *Best* in respect of claim 26, which requires the products to be substantially identical.

Even less is there any warrant for applying the *Fitzgerald* or *Best* decisions to claim 31. As set forth hereinabove, Jaffee prefers the use of chopped glass fibers larger in diameter than those recited by claim 29. Moreover, far from being silent as to permeability, Jaffee discloses that mat having a minor portion of glass microfibers (i.e. fibers smaller in diameter than the aforementioned chopped glass fibers) has very small windows that catch very fine particles and provide high efficiency filtration. Applicant thus submits that the finding that a high permeability can be attained in mat comprising fibers of smaller diameters, as delineated by claim 31, as amended, is surprising and unexpected. Such

properties are exhibited by exemplary mats of the invention, e.g. as set forth in the Examples of Table 3.

The Examiner has traversed the argument allegedly made by applicant that the flame resistance and permeability properties recited by claims 26 and 31 are not inherent. Applicant respectfully submits that the Examiner has mischaracterized applicant's position. As set forth above, the Examiner has relied on *Fitzgerald* and *Best* to presume that the claimed properties are in fact inherent. On the other hand, applicant's amendment filed on June 3, 2005 asserted that the factual situation required for *Fitzgerald* and *Best* to be applicable is not satisfied in the present instance, because the mats of Jaffee are not substantially identical to those claimed by applicant. As a result, it is maintained that the burden to prove that the claimed properties are not exhibited by the Jaffee mat has not properly been shifted to applicant. Accordingly, it is submitted that the Examiner has not established a proper basis on which the rejection based on presumed inherency could properly be predicated.

Applicant has further pointed, *arguendo*, to US Patent 4,637,951 to Gill et al., which discloses a fibrous glass mat that includes a majority of base fibers having a mean diameter in the range of 10 microns with a minor amount of microfibers (Abstract). Importantly, such a mat has a fiber content that lies within the ranges delineated by Jaffee, which teaches an embodiment that can include microdenier synthetic polymer fibers in minor proportions in combination with glass fibers having average diameters from about 9 microns to about 20 microns. See, e.g., col. 3, lines 38-40 and 47-50 of Jaffee. However, the Gill et al. mat

preferably has a porosity of no greater than 225 cubic feet per minute per square foot of mat as measured using the Frazier Air Permeability Test (Abstract). In other embodiments, the Gill et al. mat has even lower air permeability, e.g. 180 cubic feet/min (col. 5, line 59); and 40-225 cubic feet/min (claims 3 and 12). Such data clearly refute any presumption that mats disclosed by Jaffee inherently all have an air permeability of greater than about 300 cubic feet/minute/square foot, as delineated by claim 31. [“Before a reference can be found to disclose a feature by virtue of its inherency, one of ordinary skill in the art viewing the reference must understand that the unmentioned feature at issue is necessarily present in the reference. The test of inherency is not satisfied by what a reference ‘may’ teach. (‘Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient.’) (*SGS-Thomson Microelectronics, Inc. v. International Rectifier Corp.*, 32 USPQ 2d 1496, 1503 (Fed. Cir.) (unpublished), *cert. denied*, 513 U.S. 1052 (1994), quoting *Continental Can*, 948 F.2d at 1268-69, 20 USPQ 2d at 1749-50.)

Applicant respectfully submits that the Examiner’s dismissal of the foregoing argument with respect to Gill is improper, it being alleged that the applicant is required to show that the mat of Jaffee does not inherently have applicant’s air permeability range. Applicant continues to maintain the position that the burden of showing the prior art Jaffee mat does not have applicant’s claimed air permeability range has not been properly transferred to applicant under the *Best* and *Fitzgerald* standard. However, even if *arguendo* that burden has been shifted, it is submitted that the Gill teaching remains pertinent and rise

to the level of any required showing, because mats disclosed by Gill contain fibers that clearly fall within the range delineated by Jaffee.

In the present instance, the Examiner has not pointed to any disclosure or suggestion in Jaffee (or elsewhere) that differentiates the air permeability of mats broadly disclosed, at least some of which lack the air permeability required by claim 31, from those made with the particular range of average glass fiber diameter recited by applicant. Accordingly, it is submitted that the preferred mat delineated by claim 31 is novel and unobvious over Jaffee.

With respect to applicant's position concerning claims 26 and 31, the Examiner has made the following statement:

"Since the prior art reads on the present claim limitations, it is asserted that the claimed properties must be inherent to the prior product. If said property is not inherent, it is asserted that the claimed properties must be inherent to the prior product. If said property is not inherent, it is asserted that Applicant's claim must be incomplete. In other words, if Applicant's asserts a lack of inherency in the prior art product then Applicant's claimed invention is missing an element that is critical to the invention, which would patentably distinguish it from the known prior art." (Office Action dated August 15, 2005, page 7, final paragraph)

Applicant respectfully disagrees. As set forth above, Jaffee does not disclose any species that fall within the numerical ranges delineating the particular fibers used in applicant's mat and gypsum board. Applicant also submits that Jaffee does not disclose the air permeability of any mat, and the Examiner has acknowledged the lack of disclosure of the limit of air permeability of about 300 cubic feet/min/square foot recited by claim 31. Moreover, as established by the disclosure in Gill et al. cited above, at least some of the mats within the ambit of the Jaffee disclosure do not possess the requisite air permeability,

precluding any argument that the requisite air permeability is inherently present in every Jaffee mat. On the other hand, claim 31 is directed to a preferred fibrous mat, in which a structural property is recited, albeit in functional form of a limit on air permeability. The courts have repeatedly affirmed the propriety of using functional language to recite a structural feature in a claim. *In re Schreiber*, 128 F.3d 1473, 44 USPQ2d 1429, 1432 (Fed. Cir. 1997), quoting *In re Swinehart*, 439 F.2d 210, 212, 169 USPQ 226, 228 (CCPA 1971) ("[T]here is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims."). Applicant accordingly traverses the Examiner's apparent contention that a structural element is missing from any of applicant's claims.

Moreover, in view of the aforementioned disclosure of Gill et al., applicant maintains that the Examiner's rejection does not rise to the level of the test elucidated by the Board of Patent Appeals and Interferences in *Ex parte Skinner*, 2 USPQ2d 1788, 1789 (B.P.A.I. 1986). In particular, it is submitted that the rejection does not provide sufficient evidence or scientific reasoning to establish the reasonableness of the Examiner's belief that the functional limitation is an inherent characteristic of the prior art Jaffee mat. The BPAI specifically requires such a showing before the requirement ("this burdensome task") to show the lack of inherency can be invoked, as it was in the present instance.

For these reasons, it is submitted that Jaffee does not disclose or suggest a gypsum board or mat having the outstanding combination of properties afforded by the gypsum board recited by present claim 26 and the mat of claim 31.

Accordingly, reconsideration of the rejection of claims 26 and 31 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Jaffee is respectfully requested.

Claims 4-6, 19, and 20 were rejected under 35 USC 103(a) as being unpatentable over Jaffee. As to claims 4-6, Jaffee is said to teach mat containing a major portion of glass fibers having an average fiber diameter ranging from about 9 to 20 microns (col. 3, lines 35-40) and a minor portion of polyester fibers (abstract). The minor portion can have a diameter of 0.4-2 microns (col. 3, lines 40-47).

Applicant respectfully submits that claims 4-6, 19, and 20 are patentable over Jaffee for at least the same reasons as claim 1, from which they depend.

Additionally, and as correctly recognized by the Examiner, Jaffee fails to disclose a mat containing glass fibers having a diameter of between about 9.5 and 12.5  $\mu\text{m}$  that comprise: at least about 90% by weight of the glass fibers required by claims 4 and 30; or at least 95% and 97% as delineated by claims 5 and 6, respectively. The Office Action also recognizes the lack of disclosure in Jaffee of a mat having a basis weight of  $1.25 \pm 0.2$  pounds per 100 square feet, as required by claim 19. While applicant certainly agrees that the percentage of glass fibers having a diameter of 9.5-12.5  $\mu\text{m}$  is a result effective variable, applicant strongly disagrees that selection of such a restricted range is obvious in light of Jaffee. In particular, it is submitted that the smoothness of mat comprising glass fibers having a diameter ranging from about 9.5 to 12.5  $\mu\text{m}$  and of gypsum board made therewith is

surprising and unexpected, since skilled artisans would have expected such a mat not to be as smooth as mat made with smaller fibers. See page 7, lines 27-33 of the specification and the Rule 132 Declaration submitted herewith. Absent evidence to the contrary, such surprising and unexpected results, inherent to mats defined by applicant's amended claims 4-6, 19, and 20, provide ample basis for predicating patentability of those claims over Jaffee.

*In re Geisler, supra.*

Accordingly, reconsideration of the rejection of claims 4-6, 19, and 20 under 35 U.S.C. 103(a) as being obvious over Jaffee is respectfully requested.

Claim 20 was rejected under 35 USC 103(a) as being unpatentable over Jaffee in view of US Patent 6,365,533 to Horner, Jr., et al., which relates to a low fiber, pliable facer suitable for use in insulation board manufacture.

Applicant respectfully disagrees with the Examiner's position that Jaffee teaches the invention recited by claim 20, except for disclosure of a second face comprising kraft paper. The structural and functional distinctions between Jaffee's board and the board defined by applicant's claims are set forth hereinabove in connection with the 102(b) rejection of claims 1-3, 7-15, 17-18, 21-24, 27, 29, and 32 over Jaffee. Clearly, Horner, Jr., et al. does not disclose or suggest an average fiber diameter ranging from about 9.5 to 12.5  $\mu\text{m}$ . In this respect the Horner, Jr. et al. teaching does not appreciably add to the Jaffee teaching, and cannot be combined therewith to render obvious the board called for by applicant's claims.

Inasmuch as Horner, Jr. et al. does not cure the aforementioned deficiencies of Jaffee, its combination therewith does not render obvious the invention of claim 20.

For these reasons, and those set forth above, it is submitted that the proposed combination of Jaffee and Horner, Jr., et al. does not disclose or suggest the gypsum board recited by present claim 20.

Accordingly, reconsideration of the rejection of claim 20 under 35 U.S.C. 103(a) as being obvious over the combination of Jaffee and Horner, Jr., et al. is respectfully requested.

In view of the amendment to claims 1, 22, 27, 29, and 32, the cancellation of claim 7, and the foregoing remarks, it is respectfully submitted that the present application has been placed in allowable condition. Reconsideration of the rejection of claims 1-15, 17-27, and 29-32, and allowance of the present application, as delineated by amended claims 1-6, 8-15, 17-27 and 29-32, are, therefore, earnestly solicited.

Respectfully submitted,

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By

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